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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,794	07/30/2003	Zhangyuan Yang	37137-191300	9411
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VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER PUENTE, EVA YI ZHENG	
			ART UNIT 2611	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/629,794

Applicant(s)

YANG ET AL.

Examiner

EVA Y. PUENTE

Art Unit

2611

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9, 11, 13, 15, 18, 19 is/are rejected.
- 7) ☒ Claim(s) 8, 10, 12, 14, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/06)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date _____
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/7/07 have been fully considered but they are not persuasive. Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

Applicant's argument – (1) Prange and Crimmins lack motivation to combine. (2) Prior art Prange patent is not an analogous art. (3) For binary coding, only two kinds of pulse groups are needed. While in practice Prange patent have more pulse groups.

Examiner's response – (1) Primary prior art Crimmins et al disclose binary coding for two pulse groups "0" and "1" bits (9A and 9B). However, Crimmins et al is silent about transforming pulse groups with different pulse frequencies and different duration times. Prange, a secondary prior art, is introduced. Though related to light source, Prange focused on pulsing technique. Prange has shown two pulse groups with same number of pulses and different time durations (Fig. 4A) to represent two levels. The pulsing technique of Prange is also referred to as pulse frequency modulation (PFM) (Col 8, L13-14). PFM is a well known technique in the communication system, and is widely used in different communication applications. The pulses are generated at a rate advantageously varied. Binary coding is also a well known digital signal representation technique. The use of PFM for a binary coding scheme is well known in the art (see, for example, Yayla et al. (US 5,343,555), Col 11, L4-12). Therefore, it is obvious to one of ordinary skill in the art to substitute the PFM teaching of Prange for binary coding of

Crimmins et al. Results of the substitution, having digital codes "1" and "0" with same number of pulses in a pulse group but different frequencies and time durations, would have been predictable. Therefore, Prange and Crimmins provide sufficient reasons for combining and fully meet the claimed limitations. (2) Prange's patent is directed to pulse variation technique. Applicant is reminded that MPEP 2131.05 [R-5] clearly stated "the question of whether a reference is analogous art is not relevant to whether that reference anticipates. A reference may be directed to an entirely different problem than the one addressed by the inventor, or may be from an entirely different field of endeavor than that of the claimed invention, yet the reference is still anticipatory if it explicitly or inherently discloses every limitation recited in the claims". Prange's patent cures the deficiency from Crimmins's teaching and meets the recited claim language. Therefore, non-analogous art argument is inapplicable. (3) Prange discloses pulsing technique with two pulse trains/groups each with same number of pulses but different time duration (Fig. 4A, t1 and t2). The up and down pulses represent binary codes "1" and "0", respectively. Prange's patent cures the deficiency from Crimmins's teaching by showing two levels of signals ("1" and "0") having different time durations. Whether Prange may need more pulse groups or not is not relevant so long as Prange teaches two levels of signals.

2. Claim objections and 35 U.S.C. 112, second paragraph rejection have been withdrawn due to amendment.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 9 & 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crimmins et al. (6,181,255) in view of Prange et al. (7,199,376) (hereinafter, Crimmins and Prange respectively).

5. As per claims 1 & 9, Crimmins teaches, 'transforming a series of binary digits into a sequence of pulse groups, wherein the binary digit "0" and "1" in the series of binary digits are transformed respectively into the two pulse groups (figures 9A & 9B, col.11, lines 54-63). It is noted that Crimmins teaches generation of plural coded radio frequency commands (col.2, lines 38-43) (claimed 'a coding module') that includes Genie code format of two pulse groups "0" and "1" (figures 9A & 9B, col. 11, lines 54-56).

Crimmins does not teach same number of pulses and different special pulse frequencies associated with.

Prange teaches pulse frequency modulation in which he discloses two pulses 401 & 403 (figure 4A) which have same number of pulses with varied frequency between different pulse train sequences, thereby having different duration times (figure 4A, col.7, lines 51-67, Col 8, line 13-19) (claimed pulses which have two different

special defined pulse frequencies and have the same number of pulses, wherein said defined number is at least two).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Prange into Crimmins in order to varying the intensity of pulses so that permit data to be taken at many different levels as taught by Prange (co1.7, lines 43-46). Moreover, the pulsing technique of Prange is also referred to as pulse frequency modulation (PFM) (Col 8, L13-14). PFM is a well known technique in the communication system. The pulses are generated at a rate advantageously varied. Binary coding is also a well known digital signal representation technique. It would be obvious to one of ordinary skill in the art to substitute the PFM teaching of Prange for binary coding of Crimmins et al. Results of the substitution, having digital codes "1" and "0" with same number of pulses in a pulse group but different frequencies and time durations, would have been predictable.

13. As per claim 2, Crimmins teaches, 'dividing the sequence of pulse groups into pulse groups' (figures 9A & 9B, col.11, lines 54-67), 'measuring duration times of the pulse groups' (col.11, lines 38-41, col.12, lines 25-29) (it is noted in the mentioned columns and lines that Crimmins analyzes timing indicia for pulse duration in order to determine the code type which is equivalent to claim limitations), 'transforming the pulse groups into binary digits "0" or "1" according to the different duration times of the pulse groups' (figures 9A & 9B, col.11, lines 54-67) (it is noted that Crimmins is disclosing a code format in figures 9A and 9B which is divided into pulse groups with binary digits "0" and "1" according to different duration of times of the pulse groups which are 1.6

milliseconds and 800 microseconds (col.11, lines 54-67) which reads on claim limitations).

Crimmins does not teach pulse groups according to the same defined number.

Prange teaches pulse frequency modulation in which he discloses two pulses 401 & 403 (figure 4A) which have same number of pulses with varied frequency between different pulse train sequences, thereby having different duration times (figure 4A, col.7, lines 51-67, Col 8, line 13-19) (claimed pulses which have two different special defined pulse frequencies and have the same number of pulses, wherein said defined number is at least two).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Prange into Crimmins in order to varying the intensity of pulses so that permit data to be taken at many different levels as taught by Prange (col.7, lines 43-46). Moreover, the pulsing technique of Prange is also referred to as pulse frequency modulation (PFM) (Col 8, L13-14). PFM is a well known technique in the communication system. The pulses are generated at a rate advantageously varied. Binary coding is a well known digital signal representation technique. It would be obvious to one of ordinary skill in the art to substitute the PFM teaching of Prange for binary coding of Crimmins et al. Results of the substitution, having digital codes "1" and "0" with same number of pulses in a pulse group but different frequencies and time durations, would have been predictable.

6. As per claim 3, it is inherent that the time is associated with each pulse in the pulse group and the duration time of group of pulse would be the sum or total time of

the all the pulses in the group as it should be noted in Crimmins figure 9A that the total time duration of pulse group "0" is 1.6ms (claimed 'duration time of the pulse group is the total time of the period time of the all the pulse in the group or is the sum of the period time of part of specially defined pulses in the pulse group') and each pulse in "0" digit pulse group has it's own duration of time associated with.

7. As per claim 4, in addition to aforementioned rejection of claim 1, Crimmins teaches, 'sending and transferring binary signals from transmission side to a reception side' (col.3, lines 8-17) (it is noted that in the mentioned columns and lines code formats are binary signals as discloses in (col.11, line 54-56)). Furthermore, it is inherent to the system to send the pulse groups to the medium in order for system to work as it is disclosed by Crimmins that Genie codes are send to transmitting medium and receiving medium (col.12, lines 9-24) (claimed 'sending the sequence of pulse groups to a medium'). Crimmins teaches, 'at the reception side, the said sequence of pulse groups is received and divided according to the said defined number' (col.3, lines 8-20, col.12, lines 23-24) (it is noted that Crimmins teaches that the codes are received by the receiver and decoded to identify the code of the received signal (col.3, lines 18-20) therefore, transmitter sending codes in terms of pulse groups (figures 9A and 9B) have to be decoded accordingly in order for system to be reliable hence reads on claim limitations of 'reception side, the said sequence of pulse groups is received and divided according to the said defined number'). Crimmins teaches, 'duration time of the pulse groups in the sequence of pulse groups are measured' (col.11, lines 38-41, col.12, lines 25-29) (it is noted in the mentioned columns and lines that Crimmins analyzes timing

indicia for pulse duration in order to determine the code type which is equivalent to claim limitations), 'the duration time differences of the pulse groups are used to express the binary digits "0" and "1" (col.11, lines 38-41) (it is noted in the mentioned column and lines that Crimmins is using pulse width duration in order to analyze time indicia (claimed 'duration time differences') so that received code is identified (claimed duration time differences are used to express the binary digits "0" and "1"))).

8. Claim 11 is rejected under the same rationale as mentioned in the rejection of claim 4 above.
9. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crimmins et al. (6,181,255) in view of Prange et al. (7,199,376), as applied to claims 1-4 above, and further in view of Lakkis (2005/0207505).
10. As per claims 5 & 6, Crimmins and Prange teach all the limitations in the previous claims on which claim 5 depends but they fail to disclose transmission of signals within sub-channels.

Lakkis teaches, 'signal are transmitted within one or multiple sub-channels of the whole bandwidth of the medium; and the said two special frequencies are located in a sub-channel' (figures 2 or 4, page # 3, paragraphs # 0053-0054). Furthermore, Lakkis discloses 'two special frequencies of the pulse groups is located at the each side of the central frequency of the sub-channel' (figure 3).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Lakkis into Crimmins and Prange in order to provide a channel access technology that builds in programmability so that a device can

be reconfigured for different types of systems and still maintain superior performance as taught by Lakkis (page # 2, paragraph # 0011).

11. Claims 13, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crimmins et al. (6,181,255) in view of Prange et al. (7,199,376), as applied to claims 1-4 & 9 above, and further in view of Miyagi (3,355,553).

12. As per claim 13, in addition to aforementioned rejections of claims 1, 4 & 9 above, Crimmins and Prange teach all the limitations in the claim but they fail to disclose band filter, synchronous module and amplifier module. Crimmins divides the sequence of pulses into pulse groups (figures 9A and 9B).

Miyagi teaches, 'a band filter (figure 4, elements 'BPF' 29 & 30) and amplifier module (figure 4, elements 28 or 32) located at reception side (figure 4, element 'Receiver') for signal band filtering and amplifying' (figure 4), 'a synchronous module, connected with band filter an amplifier module for synchronizing the signal transmission and reception' (figure 1, element 12, col.1, lines 11-20, col.2, lines 16-32, col.3, lines 17-44), 'a decoding module, connected with the synchronous module' (figure 1, elements 12 & 13, col.2, lines 22-25).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Miyagi into Crimmins and Prange in order to provide a synchronizing system for multifrequency carrier transmission system as taught by Miyagi (col.1, lines 31-35) thus enhance system reliability.

21. As per claim 15, Crimmins and Prange teach all the limitations in the previous claim on which claim 15 depends but they fail to disclose filters and amplifiers.

Miyagi discloses, 'filters and amplifiers' (figure 4, elements 28, 29, 30 & 32, col.3, lines 20-31).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Miyagi into Crimmins and Prange in order to provide a synchronizing system for multifrequency carrier transmission system as taught by Miyagi (col.1, lines 31-35) thus enhance system reliability.

13. As per claim 18, Crimmins teaches transmission medium is the telephone lines or electrical cable (figure 1, element 28, col.4, lines 30-32) (it is noted that control lines 28 are electric cable).

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crimmins et al. (6,181,255) in views of Prange et al. (7,199,376) and Miyagi (3,355,553), as applied to claims 1-4, 9 & 13 above, and further in view of Takahira (5,182,442).

15. As per claim 19, Crimmins, Prange and Takahira teach all the limitations in the previous claim on which claim 15 depends but they fail to disclose transmission medium is electromagnetic wave.

Takahira teaches, 'transmission medium is electromagnetic wave' (figure 5, col.1, lines 15-21).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Takahira into Crimmins, Prange and Miyagi in order to restrict the amount of electric power consumed while waiting to receive signals as taught by Takahira (col.1, lines 7-10).

18. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crimmins et al. (6,181,255) in view of Prange et al. (7,199,376), and further in view of Iiyama et al. (US 5,949,826).

a) Regarding claim 7, Crimmins and Prange disclose all the subject matters above except for the specific teaching of a synchronous process before sending the pulse groups.

However, Iiyama et al. disclose a data transmission and reception system, wherein the receiver comprises a differential coding demodulator coupled to the amplitude detector and binary coding circuit (4430 in Fig. 4 and Fig. 7). The differential coding demodulator is a clock-synchronous digital circuit in response to the received signal (Col 11, L32-37). Therefore, it is obvious to one of ordinary skill in the art to combine the teaching of Crimmins and Prange with the clock-synchronous teaching of Iiyama et al. By doing so, provide proficient signal synchronization in a communication system.

Allowable Subject Matter

19. Claims 8, 10, 12, 14, 16 & 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Puente whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Puente
/E. Y. P./
Examiner, Art Unit 2611

April 11, 2008

/Chieh M Fan/
Supervisory Patent Examiner, Art Unit 2611